AUTOMATED SURFACE OBSERVING SYSTEM (ASOS)

RELEASE NOTE

SOFTWARE VERSION - 2.79X

(Vaisala CL31 Ceilometer)

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U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service / Office of Operational Systems/Observing Systems Branch
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1.0 Introduction

1.1 Background

The ASOS Acquisition Control Unit (ACU) software version 2.79X (v2.79X) operates on the new single board computer processor developed by Synergy Microsystems, Inc. V2.79X supports the All Weather Precipitation Accumulation Gauge (AWPAG) developed by Ott Hydrometrie of Germany, the new dewpoint temperature sensor (Vaisala DTS1), the Ice Free Wind (IFW) sensor (Vaisala 425), and the new replacement ceilometer (Vaisala CL31). All four new sensors (AWPAG, DTS1, IFW, and CL31) can interface to the new processor using software v2.79X.

V2.79X includes 3 new capabilities and 1 fix to a problem reported through an Operational Trouble Report (OTR). A complete list of the new capabilities can be found in Table 1 and the fixed OTR can be found in Table 2.

1.2 Purpose

This ASOS Release Note gives a summary of the changes found in ACU application software v2.79X, since v2.7B.

2.0 General Information

V2.79X has been evolving since v2.60 was developed and implemented. As each new sensor was readied for deployment a software version had to be prepared to interface to the new sensor. A site receiving the new sensor also had to have the new software to take advantage of the new capabilities offered by the new sensor. Each of these software versions was documented through a set of Release Notes. With this in mind, there are Release Notes available for each software version, i.e., v2.6A (DTS1), v2.7A (DTS1 and IFW), and v2.7B (DTS1, IFW, and AWPAG) on the ASOS website (http://nws.noaa.gov/ops2/Surface/implementation.htm). The CL31 interface to ASOS was developed using software v2.79S and this interface is now included in v2.79X.

Software v2.6A supported the DTS1 and the installation of the new single board computer processor developed by Synergy Microsystems, Inc. The algorithms for processing dewpoint temperature data for ASOS's products and messages have not changed. A new system maintenance log message was added in v2.6A to help isolate hardware problems with the new processor board.

The Vaisala 425 sonic anemometer, i.e., IFW, can only interface to ACU software versions beginning with v2.7A. (Software v2.6A was used as a baseline to develop v2.7A.) Like v2.6A, v2.7A can only be installed on the new processor board. Except for the implementation of the

new 3-second gust sampling period for the IFW, no changes were made to the ASOS wind algorithms (e.g., wind shift, variable wind direction, and peak wind remarks). Software v2.7A supports both the DTS1 and IFW sensors.

The AWPAG can only interface to ASOS using software versions beginning with v2.7B. The precipitation data processing algorithms in the ACU software are identical to those algorithms used by the Heated Tipping Bucket (HTB). In other words, only the source of the data, i.e., precipitation sensor (AWPAG or HTB), has changed and the algorithms used to process the data for the ASOS products and messages are unchanged. Since the AWPAG has advanced self-test maintenance firmware, new maintenance pages and system log messages are available for the electronics technician. Software v2.7B can support the DTS1, IFW, and AWPAG sensors.

The new replacement ceilometer, i.e., Vaisala CL31, can interface to software loads beginning with v2.79S. The data processing algorithms for generating the sky condition reports included in the METAR / SPECI reports are unchanged. Changes to the software were made to provide maintenance support for the CL31 and to allow the ACU software to ingest and process the data provided from this new sensor. V2.79S was a developmental software load and its capabilities were incorporated into v2.79X.

2.1 Verifying Installation of Software Version 2.79X

Starting at the OID's 1-Minute Screen, use the commands REVUE-SITE-VERSN-SW to verify the installation of the v2.79X ACU application software. (See Figure 1 on page 3.) If you are not sure you are looking at the 1-Minute Screen, press the EXIT function from the current page and that will return you to the 1-Minute Screen. If the EXIT function does not exist, but the SIGN function does, then you are looking at the 1-Minute Screen. (See Figure 2 on page 3.)

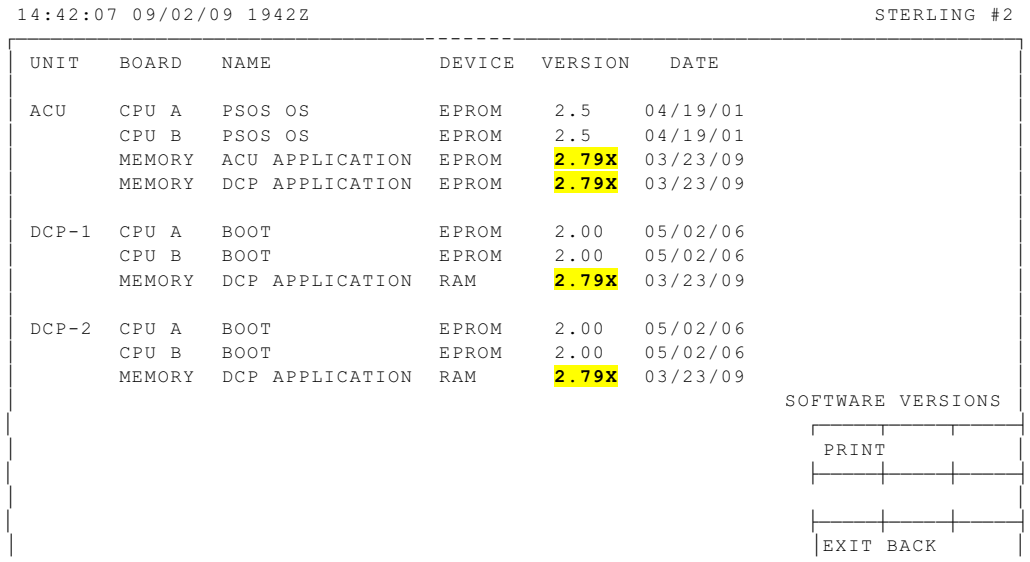

Figure 1: SOFTWARE VERSIONS Page (REVUE-SITE-VERSN-SW).

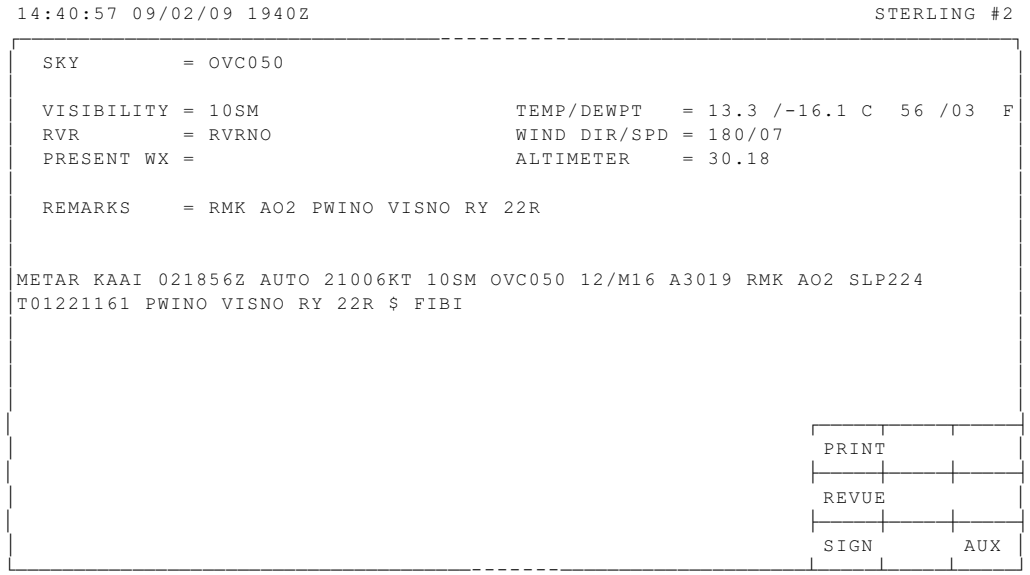

Figure 2: OID 1-Minute Screen

3.0 Specific Changes In Software Version 2.79X

There are 3 new capabilities and 1 fix to a reported software deficiency included in v2.79X. Table 1 lists each new capability with a short discussion and provides the Request-for-Change number as a reference. Table 2 lists the OTR fix with a short discussion. The OTR number is provided for reference. Tables 1 and 2 are provided below.

TABLE 1: New Capabilities In v2.79X (As of 9/9/09)

Change	Title
1. (10490)	IMPLEMENT ASOS VERSION 2.79D
	Discussion: An RC was required to fix two latent defects found in the ASOS software. The first problem was that the Ice Free Wind path errors were incorrectly causing a maintenance flag ($) to be set. The second problem was that the ADAS one-minute messages were missing data from new sensors. These two problem areas have been corrected.
2. (10491)	IMPLEMENT ASOS SOFTWARE VERSION 2.79W
	Discussion: V2.79W is a diagnostic software load used to isolate an IFW sensor problem where sensors are reporting erroneous wind averaging values and peak wind values. Every time a 'WJ' command is sent to the sensor, the sensor re-initializes and it takes about 2 minutes for the sensor to start reporting wind data. V2.79W also created a 14-hour archive of the 5-second IFW data samples. This archive will remain a part of the baseline operating ACU software. The archive is available through the Operator Interface Device and the Direct Command Mode form of remote access to ASOS.
3. (11606)	MERGE CEILOMETER REPLACEMENT (CL31) INTERFACE INTO ACU SOFTWARE
	Discussion: Vaisala no longer provides support for the existing ceilometer (CT12K). The ASOS program is scheduled to deploy the Vaisala CL31 ceilometer nationally to replace the CT12K. In order to ingest the CL31's data and provide maintenance support for the sensor, an interface for the CL31 had to be incorporated into software v2.79X.

TABLE 2: Operational Trouble Report (OTR) Fix In v2.79X
(As of 9/9/09)

OTR Number	Title
1. (1087)	FALSE DCP UPS STATUS INDICATOR
	Discussion: The DCP Uninterruptible Power Supplies (UPS) were not communicating their status to the ACU. The ACU UPS maintenance page indicates a TIMEOUT failure, despite the fact that the UPSs are functional. This problem is a firmware/software problem, and is not related to the CL31 ceilometer nor did it cause an instability in the system's performance. However, this will cause the maintenance flag ($) to be set, requiring field technicians to investigate ASOS.

4.0 Summary

Software v2.79X was developed for the purpose of implementing the new replacement ceilometer Vaisala CL31. V2.79X operates on the new single board processor, supports all the new sensors (DTS1, AWPAG, IFW and CL31), and includes 3 new capabilities and 1 software fix.